

Executive Summary

ES.1 Results from the Preliminary Alternatives Analysis

This Preliminary Alternatives Analysis Report for the Palmdale to Los Angeles Section incorporates conceptual engineering information and identifies feasible and practicable alternatives to carry forward for environmental review and evaluation in the draft environmental impact report/environmental impact statement (EIR/EIS) under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). In consideration of the varying setting and terrain covered in this Alternatives Analysis, the Palmdale to Los Angeles section was divided into four subsections from south to north:

- **Los Angeles Union Station to Metrolink CMF** – Beginning at the north end of a new High Speed Train Station in close proximity to Los Angeles Union Station and extending to the Metrolink Central Maintenance Facility (Metrolink CMF).
- **Metrolink CMF to SR2** – Beginning at the Metrolink CMF and extending to State Route 2 (SR 2).
- **SR 2 to Sylmar** – Extending through the San Fernando Valley from SR 2 to the vicinity of Bledsoe Street.
- **Sylmar to Palmdale** – Extending northeast from Bledsoe Street through the San Gabriel Mountains and terminating at the north end of a new HST station in Palmdale.

This Alternatives Analysis Report incorporates the Los Angeles Union Station (LAUS) HST alternatives from the Anaheim to Los Angeles alternatives analysis. In Palmdale, the north end of the new HST station serves as the interface to the Bakersfield to Palmdale Section. The alternatives evaluated are shown in Figure ES.5-1 at the end of this summary.

The following alignment alternatives are selected to be carried forward for detailed study in the Palmdale to Los Angeles Section HST Project EIR/EIS.

- **LAUS to Metrolink CMF**
 - Alternative LAPT1 – An alignment originating from an at-grade HST station at LAUS that includes a tunnel between Spring Street and Metrolink CMF with a cut and cover section through Los Angeles State Historic Park.
 - Alternative LAPT2 – An alignment originating from an elevated or at-grade HST station at LAUS that includes a tunnel between Broadway and Metrolink CMF.
 - Alternative LAPT3 – An alignment originating from an at-grade HST station at LAUS that includes a tunnel between Spring Street and Metrolink CMF, passing beneath Los Angeles State Historic Park in bored tunnel.
 - Alternative LAP1C – An alignment originating from an elevated or at-grade HST station at LAUS that would follow Main Street on viaduct then cross the river just north of the Main Street Bridge to the east bank of the Los Angeles River and follow the Metrolink tracks.

- **Metrolink CMF to SR 2**

- San Fernando Road Alignment – A partially covered trench along San Fernando Road along the east side of Rio de Los Angeles State Park.
- Metrolink Trench Alternative – A partially covered trench in the existing Metro right-of-way along the west side of Rio de Los Angeles State Park.

- **SR 2 to Sylmar**

Alignment ESS: HST will run within the existing Metrolink/UPRR railroad corridor, sharing the right-of-way, with the dedicated HST tracks placed to the east and the Metrolink/freight tracks relocated to the west. This alignment would allow for progressively increasing speeds to the north as it follows the existing Metrolink/UPRR corridor. It would run predominantly at grade, with the following profiles to deal with existing at-grade road crossings:

- Elevated Profile A – HST would be selectively elevated to create grade separations
- At-grade Profile B1 – Roads would be elevated to cross over HST which would be at grade
- At-grade Profile B2 – Roads would be depressed to cross under HST which would be at grade
- Trench Profile C – HST would be selectively depressed to create grade separations.

- **Sylmar to Palmdale**

- SR 14 East – An alignment that passes close to the SR 14 Highway through the Acton area and east of Palmdale Lake to follow the existing railroad right-of-way into Palmdale.
- SR 14 West – An alignment that passes close to the SR 14 Highway through the Acton area and west of Palmdale Lake, before rejoining the existing railroad right-of-way in Palmdale north of the Palmdale Transportation Center.

- **Station Options**

- Los Angeles – Union Station (as defined for the Los Angeles to Anaheim HST project)
- San Fernando Valley – a single station between LAUS and Palmdale at one of the following locations:
 - Burbank Buena Vista Alternative BVS - A station located in the City of Burbank between North Buena Vista Street and Hollywood Way, in close proximity to Bob Hope Airport.
 - Branford Alternative BSS – A station located between Tujunga Wash and Branford Street in the City of Los Angeles/Pacoima.
 - Pacoima Wash Alternative PWS – A station located between the SR 118 freeway and the Pacoima Wash, in the City of Los Angeles/Pacoima and immediately adjacent to the City of San Fernando.
 - Sylmar/San Fernando Alternative SFS – A station location located between Maclay Street and Hubbard Avenue in the City of San Fernando.

- Palmdale

- Palmdale Station Option 1 – A station location near the Palmdale Transportation Center, applied in conjunction with the SR 14 East alignment alternative.
- Palmdale Station Option 2 – A station location near Avenue P west of the Palmdale Transportation Center, applied in conjunction with the SR 14 West alignment alternative.

Table ES.5-1 summarizes the findings and recommendations of this Alternatives Analysis for all alignment alternatives and station alternatives considered.

The Authority and the FRA, in addition to performing engineering and environmental analysis, have engaged the agencies, public and the communities throughout the corridor and continue to incorporate their input. The observations below outline some of the highlights from the work and input received to-date:

- The Quantm optimization tool was used to develop and refine the program alignments between Sylmar and Palmdale and identified alternatives to take forward which are seen by the environmental agencies to have significantly less environmental impact than the original programmatic alignment through Soledad Canyon.
- The Authority has met with the City of Santa Clarita on a number of occasions. No feasible station locations could be developed for Santa Clarita, but the city will continue to be served by Metrolink to provide connectivity to the high-speed train and to Los Angeles Union Station, in the absence of a Santa Clarita HST station.
- City of Los Angeles planners for the San Fernando Valley proposed a station location adjacent to Pacoima Wash. This location has been evaluated and is recommended to be carried forward into the draft EIR/EIS.
- The City of Burbank proposed and asked for a location either at the existing Burbank Metrolink station or close to Bob Hope Airport. Both locations were evaluated, however, only the location near Bob Hope Airport is recommended to be carried forward for detailed study in the draft EIR/EIS.
- It is recommended that there only be a single high-speed station between LAUS and Palmdale. Of the station locations evaluated and recommended to be carried forward between LAUS and Palmdale, all lie within approximately 8 miles of each other in the San Fernando Valley. Analysis has suggested that ridership numbers for the system with a single station would be similar to those when there were two stations in the San Fernando Valley. Moreover, construction costs, and operational and maintenance costs will be reduced for one station.
- Through technical working groups, the City of Los Angeles and various stakeholders expressed support for a tunneled alignment crossing the Los Angeles River north of Union Station as causing less environmental impact and being more consistent with plans for future river revitalization. The resulting tunneled alternatives are recommended to be carried forward for the LAUS to Metrolink CMF sub-section.

- California Department of Parks and Recreation is concerned where alignments may be immediately adjacent to, pass under or otherwise impact state parks. The Authority will continue to work with California State Parks with regards to potential impacts.

ES.2 Alternatives Analysis Evaluation Measures

The alignment alternatives, station locations, and design options carried forward from initial review (Section 3.3) into detailed alternatives analysis were assessed for each of the project objectives and evaluation measures. This information was then used to identify (Section 4) alternatives that are feasible and practicable and are recommended for further consideration in preliminary engineering design and environmental review as part of the EIR/EIS. The primary evaluation measures are listed below.

- Design objectives (including measures such as travel time and cost)
- Land use (including measures such as consistency with land use and general planning)
- Constructability (including measures such as type and magnitude of construction and access to the corridor)
- Community impacts (including measures such as amount of land acquisition)
- Natural resources (including measures such as impacts to wetlands, potential threatened and endangered species habitat, and important farmlands)
- Environmental quality (including measures such as number of sensitive noise receptors)
- Additional considerations (including measures such as ability to meet project purpose and support by public and agencies)

ES.3 Palmdale to Los Angeles Section High Speed Train Project Background

The Authority and FRA previously made decisions with the HST Program EIR/EIS including selection of the MTA/Metrolink right-of-way as the preferred corridor for the LAUS to Sylmar section of the dedicated-track HST project. The MTA/Metrolink corridor was deemed to have less environmental impact, fewer constructability issues, fewer impacts on local communities, and require less right-of-way than the other corridors following the I-5 freeway that were considered.

Based on the analysis described in the HST Program EIR/EIS, the Authority and FRA selected the SR 58/Soledad Canyon (Antelope Valley) corridor as the preferred alignment for the Bakersfield to Sylmar section. Although the longer Antelope Valley alignment would increase travel times between northern and southern California and have lower intercity ridership potential than an I-5/Grapevine alignment option, it was deemed to have fewer potential environmental impacts, be less subject to seismic activity, involve considerably less tunneling and thereby fewer constructability issues, and increased connectivity and accessibility to the growing Antelope Valley region. Between Palmdale and Santa Clarita, a broad corridor was identified inclusive of both Soledad Canyon and SR 14 freeway alignments.

The preferred station locations for the HST within the LAUS to Palmdale section were identified as: LAUS (covered in the Anaheim to Los Angeles Section) Burbank, Sylmar, and Palmdale

These findings served as the baseline for this Preliminary Alternatives Analysis.

ES.4 Public and Agency Outreach Efforts

The Authority and the FRA, in addition to performing engineering and environmental analysis, have engaged the agencies, public, and the communities throughout the corridor and continue to incorporate

their input. In February 2007, the Authority and the FRA began a project-level environmental review of the Palmdale to Los Angeles HST Section per requirements of CEQA and NEPA. Scoping meetings were held in March and April 2007, to receive input on the scope of issues that should be analyzed in the EIR/EIS. The meetings were summarized in the Palmdale to Los Angeles High Speed Train Project EIR/EIS Scoping Report released in July 2007. The final scoping report for the Palmdale to Los Angeles Section was issued in June 2009.

(See http://www.cahighspeedrail.ca.gov/images/chsr/20090708122502_LAPalmdaleScopingReport.pdf)

In addition, a number of meetings with agencies, elected officials, the general public, and small groups of stakeholders were held throughout the Alternatives Analysis process. The purpose of these meetings was to explain the alternatives analysis process, share the results of the preliminary studies with the public and agencies, and receive feedback.

The feedback was distilled to refine the initial concepts and develop additional alternatives, station options and design refinements for consideration in this Preliminary Alternatives Analysis Report. Feedback from the public and agencies included issues such as noise, visual impacts, vibration, community cohesion, biological impacts, project cost and funding, right-of-way, accessibility, consistency with local planning, and more.

ES.5 Next Steps

This Preliminary Alternatives Analysis Report Palmdale to Los Angeles Section informs the Project Description for the Project EIR/EIS. It also sets parameters for the next level of design (15 percent) and environmental analysis. This ongoing work will provide the Authority, FRA and the communities in the Palmdale to Los Angeles corridor more details and a fuller picture of the design options in each subsection and a comprehensive vision of the entire corridor.

As the engineering and environmental work continues, the Authority will continue to meet and engage communities and stakeholders along the Palmdale to Los Angeles corridor in a discussion about the different alternatives. At a future Board meeting, Authority staff will briefly summarize for the Board the input received on the Preliminary AA Report. At that time staff will either recommend no change to the Preliminary AA Report or will present any recommended changes to the Preliminary AA Report. If deemed necessary by the lead agencies, a Supplemental Alternatives Analysis Report will consider feedback received on this Preliminary Alternatives Analysis Report and will discuss how the alternatives analysis will inform the further engineering, environmental and outreach activities in the Palmdale to Los Angeles corridor. These activities will inform preparation of the draft EIR/EIS, which is currently scheduled to be released for public comment in mid-2011.

Table ES-1. Alternatives Evaluation Summary

ALIGNMENT ALTERNATIVE/STATION LOCATION AND DESIGN OPTIONS	AA DECISION		REASONS FOR ELIMINATION (P–Primary S–Secondary)							ENVIRONMENTAL/OTHER CONCERNS
	Carried Forward	Withdrawn	Construction	Incompatibility	Right-of-Way	Connectivity/ Accessibility	Revenue/ Ridership	Community Impact	Environment	
LAUS to Metrolink CMF										
LAPT1	X									Impact to Los Angeles State Historic Park (LASHP); Only compatible with at-grade LAUS; Business displacements; Residential/business/institutional subsurface easements; Construction costs.
LAPT2	X									Runs alongside LASHP on viaduct; Business displacements; Residential/business/institutional subsurface easements; Visual resources; Construction impacts and costs.
LAPT3	X									Adjacent to LASHP; Only compatible with at-grade LAUS; Business/institutional displacements; Residential/business/institutional subsurface easements; Cultural resources; Construction costs
LAP1A		X	S					S	P	Residential/business/institutional displacements; Cultural and visual resources; Very low speed curves leaving Union Station; Constructability over existing rail lines.

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	Carried Forward	Withdrawn	Construction	Incompatibility	Right-of-Way	Connectivity/ Accessibility	Revenue/ Ridership	Community Impact	Environment	
LAP1B		X	S	P	S	S		S		Construction impacts to existing railroads; Impacts access to Metrolink CMF; Disruption to Gold Line Yard during construction and reduced access on completion; Residential/business/institutional displacements; Visual resources; Low speed curves leaving Union Station; Constructability of skewed, long-span Los Angeles River crossing under existing freeway bridges.
LAP1C	X									Residential/business/institutional displacements; Cultural and visual resources; Low speed curves leaving Union Station.
Metrolink CMF to SR 2										
Metrolink Alignment, At-grade		X		P		S			S	Not compatible with LAPT1, LAPT2 or LAPT3 alternatives; Reduced design speed. Connectivity between the Rio de Los Angeles State Park and the Los Angeles River; Impact to existing railroad; Visual impact; Business displacements.
Metrolink Alignment, in Trench	X									Reduced design speed; Connectivity between RDLASP and the Los Angeles River can be mitigated by bridging trench; Impact to existing railroad; Business displacements.
San Fernando Road Alignment, in Trench	X									Impact on Rio de Los Angeles State Park; Business displacements; Impact to Central Region High School No. 13.

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	Carried Forward	Withdrawn	Construction	Incompatibility	Right-of-Way	Connectivity/ Accessibility	Revenue/ Ridership	Community Impact	Environment	
SR 2 to Sylmar										
Alignment ESS Metrolink/UPRR Profile Alternatives										
Profile A – at grade with HST elevated over selected grade crossings	X									Not viable close to existing overbridges; Impact to existing railroad; Visual resources; Noise and vibration; Construction cost, particularly if Metrolink/freight is also elevated at the same time.
Profile B1 – at grade with roads elevated over selected grade crossings	X									Residential/business displacements and access; Impact to existing railroad; Traffic impacts; Visual resources.
Profile B2 – at grade with roads depressed under selected grade crossings	X									Residential/business displacements and access; Impact to existing railroad; Traffic impacts; Existing utilities; Operating cost.
Profile C – at grade with HST depressed under selected grade crossings	X									Only used where other options are not viable (adjacent to airports); Not viable close to existing overbridges or underbridges; Impact to existing railroad; Existing utilities; Constructability; Construction and operating cost.

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	Carried Forward	Withdrawn	Construction	Incompatibility	Right-of-Way	Connectivity/ Accessibility	Revenue/ Ridership	Community Impact	Environment	
Station Alternatives (for a Single HST Station in San Fernando Valley)										
Burbank Metrolink Station		X	S		P			P		Programmatic location, would need to leave the right-of-way for a length of several miles to satisfy design criteria; Freeway connectivity; Residential/business displacements; Noise and vibration; Constructability; Construction cost.
Burbank Buena Vista Alternative BVS	X									Business displacements; Traffic impacts and freeway connectivity; Noise and vibration; Hazardous materials.
Branford Alternative BSS	X									Adjacent water recharge ponds; Business displacements; Biological resources; Hazardous materials.
Pacoima Wash Alternative PWS	X									Elevated (60 feet above ground) station with long span bridge over freeway; Business displacements; Visual resources; Noise and vibration; Construction cost.
Sylmar/San Fernando Alternative SFS	X									Station outside Metrolink right-of-way to comply with design criteria; Constrained TOD potential; Business displacements. Cultural resources; Noise and vibration.
Sylmar/San Fernando Metrolink Station		X		P						Programmatic location, not compatible with need to cross active faults at grade - withdrawn

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	Carried Forward	Withdrawn	Construction	Incompatibility	Right-of-Way	Connectivity/ Accessibility	Revenue/ Ridership	Community Impact	Environment	
Sylmar to Palmdale										
Alignment Alternatives										
Soledad Canyon		X	S		S	S			P	Longest route length and journey time; Impacts Angeles National Forest; Crosses Cemex mineral rights granted by Bureau of Land Management; Impacts to Lake Palmdale dam/ Lake Una and adjacent road and railroad; Disruption to existing railroads; Residential/business displacements; Biological resources.
SR 14 East	X									Impacts to Lake Palmdale dam/ Lake Una and adjacent road and railroad; Residential/business displacements;
SR 14 South		X	S			S		P	S	Impacts Angeles National Forest; Siphon on California Aqueduct; Crosses Cemex mineral rights granted by Bureau of Land Management; Impacts to Lake Palmdale dam/ Lake Una and adjacent road and railroad; Residential/business displacements; Visual resources; High capital cost; Community concerns
SR 14 West	X									Siphon on California Aqueduct; Residential/business displacements;
Station Options (for a Single Station in Palmdale)										
Option 1, East, Partially Within Right-of-Way	X									Compatible with SR 14 East alignment.
Option 2, West	X									Compatible with SR 14 West alignment

Figure ES-1 Alignment and Station Alternatives

